WHAT IS CLAIMED IS:

1. A method, comprising:

collecting vibration signal data from at least one vibrating device, wherein the vibrating device includes at least a rotating inner ring, a rotating outer ring, and a plurality of rotating elements;

Sub A1

enveloping the vibration signal data, wherein enveloping the vibration signals includes applying the vibration signal data to a first filter, a rectifier, and a second filter, wherein the first filter is a high pass 4^{th} order Bessel filter having a high pass cut off frequency that is based, at least in part, upon the angular velocity of a shaft speed in the vibrating device, and wherein the second filter is a 2^{nd} order band pass filter having a band pass low cut off frequency and a band pass high cut off frequency that are each based, at least in part, upon the angular velocity of the shaft speed;

converting the vibration signal to a frequency domain signal;

determining a noise floor of a frequency domain signal, wherein determining excludes a portion of the frequency domain signal that is associated with damage or original manufacture defects in the rotating inner ring, the rotating outer ring, and the plurality of rotating elements;

determining the amplitudes of selected portions of the frequency domain signal, wherein the selected portions are associated with the frequency of rotation of the rotating inner ring, the rotating outer ring, and the rotating elements, and wherein determining the amplitudes includes determining the highest amplitudes in the portions of the frequency domain signal that are respectively associated with the defects in the rotating inner ring, the rotating outer ring, and the plurality of rotating elements;

dividing the determined amplitudes of the frequency domain signal by the determined noise floor;

comparing the result of the dividing to user-definable alarm levels; and

displaying a warning if the result exceeds the user-definable alarm levels.

2. A method, comprising:

collecting vibration signal data from at least one vibrating device, wherein the vibrating device includes at least a rotating inner ring, a rotating outer ring, and a plurality of rotating elements;

enveloping the vibration signal data;

converting the vibration signal to a frequency domain signal;

determining a noise floor of a frequency domain signal, wherein determining excludes a portion of the frequency domain signal that is associated with damage or original manufacture defects in the rotating inner ring, the rotating outer ring, and the plurality of rotating elements;

determining the amplitudes of selected portions of the frequency domain signal, wherein the selected portions are associated with the frequency of rotation of the rotating inner ring, the rotating outer ring, and the rotating elements, and wherein determining the amplitudes includes determining the highest amplitudes in the portions of the frequency domain signal that are respectively associated with the defects in the rotating inner ring, the rotating outer ring, and the plurality of rotating elements;

dividing the determined amplitudes of the frequency domain signal by the determined noise floor;

comparing the result of the dividing to user-definable alarm levels; and

displaying a warning if the result exceeds the user-definable alarm levels.

Sub A1 (cont'd)

3. The method of Claim 2, wherein enveloping the vibration signal data comprises applying at least one filter having at least one filter cut off frequency that is based upon the angular velocity of a shaft in the vibrating device.

4. A method, comprising:

collecting vibration signal data from at least one vibrating device;

enveloping the vibration signal data;

converting the vibration signal data into a frequency domain signal;

determining a noise floor of a frequency domain signal;

determining an amplitude of at least one portion of the frequency domain signal; and

dividing the determined amplitude of the frequency domain signal by the determined noise floor.

5. The method of Claim 4, wherein enveloping the vibration signal data comprises applying at least one filter having at least one filter cut off frequency that is based upon the angular velocity of a shaft in the vibrating device.

6. A method, comprising:

collecting vibration signal data from at least one vibrating device, wherein the vibrating device includes at least a rotating inner ring, a rotating outer ring, and a plurality of rotating elements;

enveloping the vibration signal data;

converting the vibration signal data into a frequency domain signal;

determining a noise floor of a frequency domain signal;

determining an amplitude of selected portions of the frequency domain signal, wherein the selected portions are associated with the frequency of rotation of the rotating inner ring, the rotating outer ring, and the rotating elements; and

dividing the determined amplitudes of the frequency domain signal by the determined noise floor.

7. The method of Claim 6, wherein enveloping the vibration signal data comprises applying at least one filter having at least one filter cut off frequency that is based upon the angular velocity of a shaft in the vibrating device.

8. A method of Claim 6, additionally comprising:

comparing the result of the dividing to user-definable alarm levels; and

displaying a warning if the result if the result exceeds the user-definable alarm levels.

9. A program storage device storing instructions that when executed perform the method comprising:

determining a noise floor of a frequency domain signal that is representative of noise generated from a vibrating device;

Sub A1 (cont'd)

determining the amplitude of at least a portion of the frequency domain signal; and

dividing the determined amplitude of the frequency domain signal by the determined noise floor.

Sub A1 (cont'd)

10. A system, comprising:

means for determining a noise floor of a frequency domain signal that is representative of noise generated from a vibrating device;

means for determining an amplitude of at least one portions of the frequency domain signal; and

means for dividing the determined amplitude of the frequency domain signal by the determined noise floor.

11. The system of Claim 10, wherein the means for determining the noise floor includes means for determining an average of at least a portion of the frequency domain signal.

12. The system of Claim 11, wherein the means for determining a noise floor excludes from the determination selected portions of the frequency domain signal that relate to defect frequencies.

13. The system of Claim 10, additionally comprising means for converting a time domain signal into the frequency domain signal.

14. The system of Claim 10, additionally comprising means for comparing the result of the dividing to user-definable alarm levels.

15. The system of Claim 10, wherein the user definable levels indicate damage in a rotating device.

16. A system, comprising:

a vibrating device;

a transducer configured to collect data about the vibrating device; and

a computer configured to determine a noise floor of a frequency domain signal that is generated from the collected data, wherein the computer is also configured to determine an amplitude of the frequency domain signal at least one portion of the frequency domain signal, and wherein the computer is also

configured to determine amplitude of the frequency domain signal by the determined noise floor.

17. A method comprising:

determining the standard deviation of a time domain signal that is representative of the vibrations of a rotating device ; and

determining the number of times the time domain signal exceeds a threshold, wherein the threshold is based at least in part upon the standard deviation.

18. The method of Claim 17 additionally comprising displaying the determined number.

19. The method of Claim 17, wherein the threshold is a multiple of the standard deviation.

20. A system comprising:

a vibration monitor configured to determine the standard deviation of a time domain signal that is representative the vibrations of an electronic device, the computer determining the number of times the time domain signal exceeds a threshold, wherein the threshold is based at least in part upon the standard deviation.

21. The method of Claim 17, wherein the threshold is a multiple of the standard deviation.

22. A method, comprising:

determining a noise floor of a frequency domain signal;

determining an amplitude of at least one portion of the frequency domain signal; and

dividing the determined amplitude of the frequency signal by the determined noise floor.

23. The method of Claim 22, wherein determining a noise floor includes determining an average of at least a portion of the frequency domain signal.

24. The method of Claim 23, wherein determining a noise floor excludes from the determination selected portions of the frequency domain signal that relate to defect frequencies.

25. The method of Claim 22, additionally comprising converting a time domain signal into the frequency domain signal.

26. The method of Claim 22, additionally comprising comparing the result of the dividing to user-definable alarm levels.

27. The method of Claim 26, wherein the user definable levels indicate damage in a rotating device in an electronic device.

28. The method of Claim 22, wherein determining the amplitude includes identifying the highest amplitude in a range of frequencies in the frequency domain signal.

29. The method of Claim 22, wherein the range of frequencies is user-definable.

30. A method of detecting bearing defects, the method comprising:

measuring vibration amplitudes at one or more bearing defect frequencies;

measuring vibration amplitudes of frequencies other than the bearing defect frequencies to define a noise floor;

dividing the vibration amplitude at bearing defect frequencies by the noise floor to produce a normalized defect frequency amplitude compensated for non-damage related vibration; and Same claim 1

comparing the noise compensated vibration measurement to a predefined threshold value.

31. A method of detecting contaminants in bearing lubrication, the method comprising:

measuring time domain amplitudes of noise generated by a bearing; and counting excursions in amplitude above a predefined threshold.

32. A system, comprising:

a noise floor determination module configured to determine a noise floor of a frequency domain signal, wherein determining excludes a portion of the frequency domain signal that is associated with damage or original manufacture defects in at least one of the following: a rotating ring and at least one of a plurality of rotating elements.

33. A system for detecting contaminants in bearing lubrication, the system comprising:

an excursion counter configured to measure time domain amplitudes of a bearing and configured to count excursions in amplitude above a predefined threshold.

34. A method of detecting bearing defects, the method comprising:

measuring vibration amplitudes at one or more bearing defect frequencies;

measuring vibration amplitudes of frequencies other than the bearing defect frequencies to define a noise floor;

dividing or subtracting the nose floor from the vibration amplitudes at the bearing defect frequencies to produce a noise compensated vibration measurement at the bearing defect frequencies; and

comparing the noise compensated vibration measurement to a predefined threshold value.

35. A method of enveloping a vibration signal, the method comprising:

receiving a vibration signal that is indicative of vibrations in a vibrating device; and

applying a filter to the vibration signal, wherein the filter has a cut off frequency that is based at least in part upon the angular velocity of a rotating shaft in the vibrating device.

36. The method of Claim 35, wherein the filter is a high pass or a band filter.

37. The method of Claim 35, additionally comprising applying an absolute value rectifier to the filtered vibration signal.

38. The method of Claim 35, additionally comprising applying a second band pass filter to the filtered vibration signal, also using high and low cut off

frequencies that are based at least in part upon the angular velocity of the rotating shaft in the vibrating device.